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ABSTRACT

This research examines the effects of family organization upon student achievement. The authors are particularly concerned with teacher expectations and beliefs regarding single parenting and its effects upon skill acquisition. The sample is made up of over 400 fifth graders in the public schools of a middle sized midwestern city. Data regarding student achievement are based on results of the California Achievement test. Independent variables included are race, sex, family organization and three measures of family socioeconomic status. Examination of the data for variability attributable either to independent variables or interaction effects was carried out through the use of a two-way analysis of variance utilizing a least squares method. The generalized observation regarding the data must be that students from two-parent families tend to record higher achievement scores than do students from one-parent families. Often these findings are tempered by the apparent lack of discrepancy between the family organization patterns in the higher ranges of the socioeconomic variables. Generally, family organization seems to have a greater impact on the students in lower ranges of the socioeconomic scales. (Author)

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Effects of Family Organization Within Socioeconomic Strata Upon Basic Skill Achievement

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EFFECTS OF FAMILY ORGANIZATION WITHIN
SOCIOECONOMIC STRATA UPON BASIC SKILL ACHIEVEMENT

Introduction

Common observations in public schools remark upon the marital status of childrens' parents. These observations seem to exclusively link poor academic performance and parental marital status. Never are comments noted which draw conclusions between an academically gifted student and the marital status of his/her parents. In the opinion of the authors, educators reflect the popular but fading belief that divorce is bad: one individual cannot properly parent, and that children must, by definition, suffer deleterious academic effects if their parents do not live together.

With the increasing occurrence of divorce within our society and with numerous authors questioning the previously unquestioned positive effects of the nuclear family, it is appropriate to examine the effects of family organization upon student achievement. Given the acknowledged impact of teacher expectation upon student achievement, it is appropriate to collect data regarding the felt beliefs of seemingly large numbers of educators of the effects of single person parenting as that family organization pattern relates to basic skill acquisition.

The authors' basic objective was to systematically collect and examine data regarding student basic skill achievement and various family demographic variables. The questions for which a response is intended are as follows:

Are there differences in the achievement levels of students who live with one or both parents?

Are there differences in achievement between boys and girls within the dichotomy of family organization?

Do racial characteristics play a role in any possible effects of family organization upon student achievement?

Do the various components of family socioeconomic status effect the responses to any/all of the previous questions?

Project Description

The locale for this effort was a midwestern city with a population of approximately 100,000 and a public school student population of 15,000-20,000. Being the site of a major university, the population must be considered a-typical, at least in terms of community education achievements. The student population is made up of 17.5 percent ethnic minority group members, 13.9 percent of which are black. The next largest minority sub-group is Asian-American, which comprises two percent of the student population.

The population for this study includes all fifth-grade students in the school district. The size of this population is approximately 1,200 students.

Within this population the students in twelve of the schools were identified as appropriate for a sample of manageable size. Six of these schools are those with the highest percentage of minority students, as well as the highest percentage of low-income families based upon the district's E.S.E.A. Title I eligibility report. The remaining six schools in the sample were identified as most closely representing the average elementary school when both minority and low-income percentages were the primary consideration.

Within the twelve identified schools, the decision was made to concentrate the study upon the fifth-grade students. The reasons for this

decision was that each fifth grader had been administered a standardized survey achievement instrument.

The California Achievement Test, normed and published by CTB/McGraw-Hill in 1970, was used to collect data regarding student achievement. The CAT-70 was administered to all fifth graders in the fall of the school year. Classroom teachers administered the tests to their students. Reported to be a good general survey achievement instrument, the CAT-70 appears upon review to have good content validity for the district fifth-grade curriculum.

Demographic data were gathered from all fifth graders by asking parents to complete a new school registration form. Added to the standard school form were additional parent occupational and educational categories. The decision to request these demographic data from parents was made after a review of student files revealed a serious lack of family information. In addition to the problem of missing data, it was recognized that much of the data in the files originated upon the student's enrollment in school six years earlier.

The seven dependent variables are the seven subtests (reading vocabulary, reading comprehension, math computation, math concepts, language mechanics, language usage, and spelling) of the California Achievement Test (Tiegs and Clark, 1970). For the purpose of this study, students' raw scores are of primary interest.

Independent variables included are: race, sex, family organization (two parents/one parent), and three measures of family socioeconomic status. These SES measures are: (1) the average educational level of the parents. These data were determined by summing and then averaging mother's and father's

years of education. In the case of data for only one parent, the data represented the mean. (2) The highest occupational prestige factor in the home was utilized if two parents were employed (Siegle, 1971). (3) The estimated total family income was the third factor. These data were taken from the Detailed Characteristics, 1970 Census, utilizing occupation information supplied by the parents.

Data Analysis

The size of the sample is over four hundred. Of this group, approximately twenty percent come from single-parent homes. The minority group size of the total sample approximates the total population figure of seventeen percent.

Examination of the data for variability attributable either to independent variables or interaction effects was carried out through the use of a two-way analysis of variance utilizing a least squares method. Upon reviewing the outcome of these analyses, the authors have selected those which appeared to have the greatest interest for this paper. The reader should also be advised that mean achievement values are expressed in terms of raw scores obtained on the various subtests of the CAT-70.

The following series of tables examine the relationship between the independent and dependent variables utilizing the two-way analysis of variance model. Significant comparisons were noted at the .05 level for committing type I error.

Family Organization and Parental Education as Independent Variables

Reading comprehension

Table 1 examines the data for parental educational level and family organization on the dependent variable of reading comprehension. It will be noted that statistically significant differences were observed on both main effects, but that the interaction effect failed to approach significance. Children from two parent families scored at a higher level than did those from one parent families. Similarly student achievement levels increased with their parents' level of education. The interaction of these two variables, however, had no effect upon achievement.

Math computation

Table 2 examines achievement in the area of math computation. The results are similar to those reported in the previous table. Students from two parent families achieve at higher levels. Students achievement increases with their parents' education levels. The interaction of the two independent variables produces no significant differences.

Language mechanics

In the area of language mechanics achievement as reported in Table 3 one of the main effects, parental education, produced a significant result. Again, achievement improved with the level of education the parents had attained. Family organization had no effect upon achievement. The interaction effects similarly had no impact.

Family Organization and Parent Occupational Prestige as Independent Variables

Reading comprehension

The occupational prestige of parents was considered as an independent variable along with family organization. Table 4 reviews the data from this analysis. The effects of both of these variables were found to be significant.

Table 1

Reading Comprehension Achievement Considered With

Family Organization and Parental Education

Family Organization		Parental Education: up to 12.5 years	12.5 to 16.5 years	above 16.5 years
One Parent	N	39	27	23
	M	17.1	23.4	27.7
	SD	8.5	9.3	7.7
Two Parents	N	84	141	120
	M	20.8	25.5	29.2
	SD	9.0	7.2	8.1

Least Squares ANOVA

Source	df	MS	F	Prob.
Family Organization	1	439.5	6.7	.01
Parental Education	2	2568.8	39.3	.000
Interaction	2	31.6	.5	.61
Within	428	65.4		

Table 2

Math Computation Achievement Considered With

Family Organization and Parental Education

Family Organization		Parental Education		
		up to 12.5 years	12.5 to 16.5 years	above 16.5 years
One Parent	N	39	27	23
	M	29.3	33.0	40.7
	SD	12.2	11.9	7.8
Two Parents	N	84	141	120
	M	33.3	37.0	40.0
	SD	11.2	9.8	10.7

Least Squares ANOVA

Source	df	MS	F	Prob.
Family Organization	1	489.1	4.5	.03
Parental Education	2	1905.0	17.4	.000
Interaction	2	156.2	1.4	.24
Within	428	109.3		

Table 3

Language Mechanics Achievement Considered With

Family Organization and Parental Education

Family Organization		Parental Education		
		up to 12.5 years	12.5 to 16.5 years	above 16.5 years
One Parent	N	39	27	23
	M	25.0	30.7	40.2
	SD	17.1	17.5	14.7
Two Parents	N	84	141	120
	M	26.7	34.6	41.8
	SD	14.3	14.4	14.7

Least Squares ANOVA

Source	df	MS	F	Prob.
Family Organization	1	404.3	1.8	.18
Parental Education	2	7351.7	32.9	.000
Interaction	2	38.1	0.2	.84
Within	428	223.1		

Students whose parents' prestige was above the median scored higher in reading comprehension than students whose parents' prestige was below the median. Once more students from two parent families scored significantly higher than those from one parent families. The interaction effects, while not significant, did seem to indicate the presence of a trend which indicates that the two parent/high prestige cell tends to produce higher achievement.

Table 4

Reading Comprehension Achievement Considered With Family Organization and Occupational Prestige

Family Organization		Occupational Prestige: Below Median	Occupational Prestige: Above Median
One Parent	N	52	37
	M	18.8	26.0
	SD	9.5	8.0
Two Parents	N	171	174
	M	23.7	27.6
	SD	8.6	8.1

Least Squares ANOVA

Source	df	MS	F	Prob.
Family Organization	1	848.1	11.9	.001
Occupational Prestige	1	2223.9	31.1	.000
Interaction	1	198.4	2.8	.10
Within	430	71.5		

Math computation

Table 5 illustrates the data regarding achievement in the area of math computations while considering occupational prestige and family organization. As may be noted all effects recorded F ratios which were significant. Regarding the interaction effects it appears that the one parent-high prestige model is the most effective although the difference between two parent-high prestige is minimal. The one parent-low prestige model is indicated as the least effective regarding student achievement in math computation.

Family Organization and Parent Income Level as Independent Variables

Reading comprehension

The interaction between family organization and income level produced a significant effect on the dependent variable of reading comprehension. Table 6 illustrates these data. The data indicate that the difference between the two parent and one parent organization is not as great for the above median income level group as for the below median income level group. For the below median income level group the one parent family organization is associated with lower reading comprehension than the two parent family organization.

Math computation

In Table 7 only the main effects attain statistical levels of significance to reject the null hypotheses. Still, the interaction effect is strong enough to speak in terms of a trend. Students from two parent homes achieve at a higher level in math computation than students from one parent homes. Viewing the mean values leads to the belief that this is especially true in cases where the family income is below the median. The level of the interaction F ratio, which is very near statistical significance, leads to the belief that the difference in mathematics computations between the two parent and one parent cells for the low income levels is greater then for the high income levels.

Table 5

Math Computations Achievement Considered With

Family Organization and Occupational Prestige

Family Organization		Occupational Prestige: Below Median	Occupational Prestige: Above Median
One Parent	N	52	37
	M	29.4	39.0
	SD	12.2	9.1
Two Parents	N	171	174
	M	35.8	38.5
	SD	10.4	10.5

Least Squares ANOVA

Source	df	MS	F	Prob.
Family Organization	1	815.3	7.3	.007
Occupational Prestige	1	1799.6	16.0	.000
Interaction	1	819.0	7.3	.007
Within	430	112.2		

Table 6

Reading Comprehension Achievement Considered With

Family Organization and Income Level

Family Organization		Income Level: Below Median	Income Level: Above Median
One Parent	N	57	32
	M	19.5	25.7
	SD	9.8	7.8
Two Parents	N	167	178
	M	24.7	26.5
	SD	8.7	8.3

Least Squares ANOVA

Source	df	MS	F	Prob.
Family Organization	1	835.6	11.2	.001
Income Level	1	730.1	9.8	.002
Interaction	1	330.1	4.4	.03
Within	430	74.7		

Table 7

Math Computation Achievement Considered With

Family Organization and Income Level

Family Organization		Income Level: Below Median	Income Level: Above Median
One Parent	N	57	32
	M	30.9	37.8
	SD	12.5	9.5
Two Parents	N	167	178
	M	36.1	38.8
	SD	11.0	10.1

Least Squares ANOVA

Source	df	MS	F	Prob.
Family Organization	1	762.6	6.6	.01
Income Level	1	906.2	7.9	.005
Interaction	1	420.1	3.7	.057
Within	430	115.2		

Family Organization and Student's Sex as Independent Variables

Reading comprehension

Family organization as a main effect had a significant impact upon reading comprehension when considered with student sex as the other independent variables. Students from two parent families achieve at a higher rate than did those from one parent families. The sex of the student was not significant nor was the interaction effect. Table 8 illustrates these data.

Table 8

Reading Comprehension Achievement Considered With

Family Organization and Student Sex

Family Organization		Sex	
		Male	Female
One Parent	N	45	44
	M	21.8	21.7
	SD	9.1	10.1
Two Parents	N	191	154
	M	25.8	25.5
	SD	9.0	8.1

Least Squares ANOVA

Source	df	MS	F	Prob.
Family Organization	1	1052.7	13.7	.000
Sex	1	8.3	0.1	.74
Interaction	1	0.4	0.0	.95
Within	430	77.1		

Math computation

The data observed in Table 9 is very similar to that reported in the previous table. The only significant effect is noted for family organization. Once more students from two parent families achieved at a higher level, this time in math computation.

Table 9

Math Computation Achievement Considered With

Family Organization and Student Sex

Family Organization		Sex: Male	Sex: Female
One Parent	N	45	44
	M	32.1	34.6
	SD	12.0	11.9
Two Parents	N	191	154
	M	36.7	37.6
	SD	11.4	9.4

Least Squares ANOVA

Source	df	MS	F	Prob.
Family Organization	1	1033.4	8.8	.003
Sex	1	163.8	1.4	.239
Interaction	1	45.1	0.4	.536
Within	430	117.8		

Spelling

Both main effects were significant as reported in Table 10. In the area of spelling students from two parent families scored higher than those from a one parent organization. Similarly girls scored higher then did boys. The interaction effect lacked statistical significance to reject the null hypothesis.

Table 10

Spelling Achievement Considered With

Family Organization and Student Sex

Family Organization		Sex: Male	Sex: Female
One Parent	N	45	44
	M	15.7	18.3
	SD	8.1	8.3
Two Parents	N	191	154
	M	18.0	20.0
	SD	7.3	6.4

Least Squares ANOVA

Source	df	MS	F	Prob.
Family Organization	1	335.1	6.5	.01
Sex	1	564.8	11.0	.001
Interaction	1	2.8	0.1	.82
Within	430	51.4		

Family Organization and Child's Race as Independent Variables

Reading comprehension

Table 11 examines student achievement data in the area of reading comprehension considering family organization and race as the main effects. The main effect of race and the interaction effect produced statistically significant

variability while family organization was very near that level. White students recorded higher scores than did black students. The interaction significance leads to the conclusion that the difference on reading comprehension between two parent and one parent family organization is greater for the black students than for the white students with the black students from one parent families having the lowest mean.

Table 11

Reading Comprehension Achievement Considered With Family Organization and Race

Family Organization		Race	
		Black	White
One Parent	N	37	51
	M	15.0	26.5
	SD	7.8	7.6
Two Parents	N	66	265
	M	19.4	27.0
	SD	8.2	7.9

Least Squares ANOVA

Source	df	MS	F	Prob.
Family Organization	1	236.2	3.8	.052
Race	1	5672.4	90.9	.000
Interaction	1	242.7	3.9	.049
Within	415	62.4		

Math computations

Student achievement in the area of math computation with the main effects of family organization and race are illustrated in Table 12. Again, statistical significance is noted for the main effect of race and the interaction effect. White students scored higher than did black students. A review of the cell means with the significance of the interaction effect in mind leads to the conclusion that for black students the difference between one parent families and two parent families is greater than for white students. Again, white students scores from one and two parent families are virtually identical.

Table 12

Math Computation Achievement Considered With

Family Organization and Race

		Race	
Family Organization		Black	White
One Parent	N	37	51
	M	26.5	38.3
	SD	11.7	9.6
Two Parents	N	66	265
	M	31.7	38.1
	SD	10.3	10.2

Least Squares ANOVA

Source	df	MS	F	Prob.
Family Organization	1	214.7	2.0	.15
Race	1	4704.6	44.6	.000
Interaction	1	443.9	4.2	.04
Within	415	105.6		

Conclusions

The generalized observation regarding the data must be that students from two parent families tend to record higher achievement scores than do students from one parent families. Often these findings are tempered by the apparent lack of discrepancy between the family organization patterns in the higher ranges of the socioeconomic variables. Generally, family organization seems to have a greater impact on the students in lower ranges of the socioeconomic scales. The reasons for this may be obvious. The higher income, prestige, and educational level parent is more apt to have the time, resources, and experience to direct toward student achievement levels. The observation is certainly not striking. Still, with only rare exceptions students from two parent families scored higher regardless of the other effects.

While data collected seems to have fairly specific trends, the authors urge caution in generalizing the results. Too little is known regarding the effects of other family organization variables, i.e. siblings. We have no measure of the length of time students have lived in a one parent model. Nothing is known of other significant adults or of the role of the missing parent. Similarly, it has not been possible to guage the psychological stage of development through which each student was passing when the physical separation from a parent occurred.

Many factors are likely to impact a students basic skill achievement. The authors have attempted to provide data which would indicate the need for classroom teachers to consider the possible needs of students who reside with one parent.

Educational Significance

As our society goes through a period of seemingly speeded social evolution in terms of interpersonal relationships, family organization, and demands upon

existing institutions, it seems appropriate to search for possible affects of these modifications upon student achievement within the framework of the well established study of teacher expectation. As the persons generally most intimately involved with children outside of their homes, teachers must constantly be aware of their own personal biases. Being members of various other social, religious, ethnic, etc. subgroups, teachers quite naturally carry with them the perceptual screening apparatus of all other members of our society. These perceptual "blind-spots" may be racial. They may be social class oriented. Or, as in the case of the present study, they may be directed toward the lifestyles of the parents of children for whom they are charged with the responsibility for the development of basic academic skills.

As key persons in the lives of children, teachers must work to be aware of their personal biases, especially as these biases and expectations impact the academic achievement of their students. The current study seeks to illuminate what seems to be an area which has drawn little attention, and to suggest to professional educators a possible need to modify programs to meet the special needs of specific categories of students.

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